

ON CANNEL COAL.

We mentioned last week the visit of the Gas-fitters' Mutual Association to the works of the Western Gas Company. We now give an outline of the lecture which was delivered by Mr. Wright.

The lecturer commenced by expressing the gratification he felt at observing the strong desire manifested by the Gas-fitters' Association to obtain information respecting Cannel coal gas. He had felt great interest in that Association since its commencement, because he was convinced that it was the interest of gas consumers, gas manufacturers, and gas-fitters, to be united together, study each other's departments, and work into one another's hands. Until the gas manufacturers and gas-fitters understood what kind of commodities they had to deal with, and were prepared to receive suggestions from one another, they could not accommodate themselves to the public desires, and neither party could go on prosperously. He was therefore happy to find a union springing up between these parties, from which union he anticipated the best results. Within the last few years, the use of Cannel coal gas had greatly progressed; and it would be their fault if it did not continue to do so, for he was satisfied that from Cannel coal they obtained the greatest quantity of light for the least money; still it was difficult to deal with the many prejudices engrafted on the public mind on this subject. It had been studiously instilled into the public mind, that gas was a measurable commodity, like water. That was not the case. The specific gravity of water was universally the same—it was a unit, for salt-water differed but very little from fresh in its specific gravity. But the difference between the common coal gas and that derived from Cannel coal was very great indeed. That was one of the vulgar errors which they had to root out of the public mind. The commissioners of St. James's had, within the last few months, fully and fairly investigated the matter, and they found Cannel coal gas, at 5s. per thousand feet, to be from 40 to 50 per cent. cheaper than the old gas at 5s. per thousand feet. Since the Western Company applied to lay their mains in St. James's, the opposing companies were obliged to improve the quality of their gas from 20 to 30 per cent. He was glad of this, for he had attached himself to the Western Gas Company from a desire to spread good gas through London. He was not in the habit of using strong language with respect to other companies, but now that they were in the habit of putting half Cannel coal in their gas, he thought it fair to explain. Before the House of Commons, twelve months ago, it was proved by scientific men, that every 5 cubic feet of their gas were only equal to twelve sperm candles. He would be able to show presently, by the photometer, that 5 cubic feet of the Cannel coal gas were equal to thirty candles. If, however, the other companies should raise their gas to sixteen candles, it could not be expected that the Great Western Company could raise its gas to thirty-two. He would now go a little into the natural history of the coal from which this gas was produced. They were all well aware that coal was universally produced from decayed vegetable matter: geologists were all agreed in this. He had before him some specimens of vegetable matter, which time and the rapidity of chemical action, and other circumstances attending their submersion in the bowels of the earth, had converted into coal. One of these was a specimen of brown coal, in which some of the leaves were quite perceptible. This specimen was from the tertiary formation. It was useless for the manufacture of gas, but was employed in France for the manufacture of naphtha. The next specimen was a Cannel coal, called "Bughead Cannel." It produced a very dull light when struck. In that respect it very much resembled wood, from which it was little removed; but it yielded 12,000 feet or 13,000 feet of gas of astonishing illuminating power. It was the most extraordinary specimen of coal with which we were acquainted. The Wigan Cannel was almost the opposite: extreme of the Bughead Cannel. The Wigan Cannel was a bright, lustrous, pitchy, and compact mass. Between these were the Wemyss, Larnahago, and Newcastle Cannels. He remarked, about two years ago, that the illuminating power of the gas was in

proportion to the darkness of the coal from which it was produced; and he was bold enough to attack the common theory, which was the very opposite. The coals which had the least amount of basis were the brightest. The manufacture of Cannel coal gas was similar to that of common coal gas. The coal was first put into retorts about the heat of melting brass. The whole of the vapour was expelled from it, and the pure carbon and earthy matter remained in the retort. The specimen which he held in his hand was nearly pure carbon. It would be easy to conceive that if that had been deposited in the bed of a river, or in an estuary, a portion of sand or silex would be washed into it, and cause it to have something like its present appearance. In all coke there was some of this earthy matter mixed, and the less of that matter it contained, the more excellent in quality was the coke. After the vapour was expelled, ammonia-water, tar, and naphtha, were the secondary products arising from the condensation of gas. Sulphuretted hydrogen was then extracted by means of the lime purification, and the process was completed. Gas was valuable in proportion to the weight of carbon contained in it. The Western Company's gas was a little more than half the weight of atmospheric air. It was from '550 to '560. It had much olefant and very little carburetted hydrogen gas in it. The ordinary coal gas possessed little olefant gas. The specific gravity of ordinary coal gas was about one-third of that of atmospheric air. The Western Company's gas was '550, as compared with '400, which represented the ordinary gas. The former gas contained 150 more particles of carbon, which made its illuminating power double. While on this part of the subject, he would observe one advantage which gas-fitters and the public would derive from the use of the Cannel coal gas. If only half the quantity of vapour were required to pass through the meter, then a three-light meter would do as well with cannell-coal gas as a five-light meter with any other, and a saving of 15s. would be effected in that matter alone. For if you only wanted, in order to obtain a given amount of light to transmit half the usual quantity of gas, the pipes would be much smaller, and therefore a considerable saving would be effected. Some gentlemen might think that a reduction of price would not be a favourable matter for their profession, but he was persuaded that the more prices were reduced in a fair way, the better it would be for all parties, and ere long he thought gas-fittings, and everything connected with gas-lighting, would not come to more than three-fourths of what they cost under the old system. The first outcry on account of gas-fittings constituted the great objection on the part of consumers, and if that could be diminished one-fourth by the introduction of Cannel coal gas, a very great impetus would be given to the business of gas-fitters. He called attention to the combustion of gas, and the particular circumstances under which combustion was effected. No part of the lecture could be of so much importance to gas-fitters as to know the precise steps gone through during the process of combustion, and to know the burners that gave the greatest amount of light and occasioned the least amount of nuisance. That burner which produces the greatest amount of light is not always the most agreeable, and therefore it was sometimes advisable to sacrifice the greatest quantity of light for convenience. Some supposed that where the greatest quantity of light was given the flame was the brightest. That was not always the case; for of the eight burners of different kinds then in operation, those whose flames was the most dusky in colour gave the most light. The gas coming out of the jet before him was composed of hydrogen and carbon. The first operation that took place was this: the hydrogen, having a greater affinity for the oxygen of the atmosphere than the carbon, flew out, and seized the oxygen. The bottom of the flame is blue, because there the hydrogen and carbon are combined, and no two gases can produce light. In the inside of the column of flame a series of little balls of carbon, or particles of soot (too minute to be seen, perhaps, by the microscope), are passing: the oxygen attacks them; and, in the instant of combustion, they become red hot, and that causes light.

There could be no light without smoke. The ancients had a proverb, which implied so much—*Es fumo dare lucem*. If a piece of iron were passed through the lower part of the flame, no smoke would be deposited upon it, but if placed at the top it would become smoked at once.

FOREIGN NEWS.

Omnia Omnibus!—This singular and rather Communist inscription on the spicoid Gallere St. Hubert, Brussels, seems to have, after all, received a practical corroboration and confirmation in England, by the fact, that public baths and washhouses, established at an almost nominal admission-fee, have not only paid their expenses, but even yielded a considerable sum of profit,—in some instances 130*l.* in one year. Yet, it was the great expense attending on the establishment of such public commodities (necessities?), which delayed their execution for such a considerable time, as the necessity of public baths and washhouses had been urged in London forty years ago. And, thus, a novel and hitherto unknown axiom of political economy has come to light, viz. that "every commodity which the mass of the people require for their human-like and human-worthy existence, may and can be obtained at a price accessible to them . . . if the establishment and management thereof be conducted wisely, cleverly, and honestly,"—a theme on which it does not convene to dilate here more extensively. We may only state, that in Cologne, Hamburg, and other German cities, cheap dining-houses have been established, which do well and pay their expenses. It cannot be said that such an establishment would encroach on the business of keepers of dining-rooms—but suppose it did: why, it is better than to let (especially in the inclement season, the poor go without a warm dinner, and subsequently and consequently saddle the whole community with taxes for infirmaries, dispensaries, and the ultimate keeping and burial in workhouses. The price of a meal in Cologne is five plennige (one halfpenny), for which a person can obtain a basin of substantial soup, made of peas, groats, &c.; but, of course, he may take two, if he likes, and bring a piece of meat and bread with him.* The utmost cleanliness is observed in these places, the table-cloth is changed every day, the floor scoured; the rooms in Cologne and Hamburg are well lighted (no window-tax!), adequately warmed in winter: in fact, after the experience of the baths, it is no more charity which is dispensed in these places, but they are only one of the new modes of our century. If the managers make and keep such places cheerful and homely, why, the people ought, as a matter of course, to behave as if they were at home. A German proverb says, "It is a bad bird which soils its own nest."

Lighthouses in France.—According to an official report, there are on the sea-coast of France, at present, 57 lighthouses of the first class. Besides those destined to mark at a long distance the points of the coast, 107 lights of less reach indicate the entrance of the ports and bays of France. Of the 57 large lights, 17 are in the Channel, 25 on the Atlantic, and 15 on the Mediterranean.

Cologne.—Rhenish Archaeological Society.—First Conversation, 8th Jan.—The secretary, Dr. Overbeck, recapitulated the previous activity of the society, whose meetings had been interrupted since 1847. Professor Walker explained the painting of an antique vase, which had never been properly understood, although it contained an interesting inscription of Doric names. Before Arkesilaoe, the famous ruler of Kyrene, *silphion* (a medicinal drug) huddled together in masses, is weighed and placed in vaults. *Silphion* was one of the chief exports of Kyrene, as it was extensively used by the ancients both as a medicine and a spice; and it seems to have been grown as a *regale*, as Arkesilaoe assists the present act with his sceptre in hand, and a clerk seems to make a report to him. Dr. Overbeck then directed attention to a lecture delivered at the Berlin Congress of Philologists, "On the Scope and the present Position of Archaeological Science," which contains a very sys-

* We are convinced, that if sound bones be boiled in Papinian copper, a pint of substantial pea or other soup, with some meats and herbs added, can, at present prices, be furnished here for five farthings, or even six suppers.